

**IUFRO Spotlight** is an initiative of the International Union of Forest Research Organizations. Its aim is to introduce, in a timely fashion, significant findings in forest research from IUFRO officeholders and member organizations to a worldwide network of decision makers, policy makers and researchers.

IUFRO will encapsulate, and distribute in plain language, brief, topical and policy-relevant highlights of those findings, along with information on where/how to access the full documents. The **IUFRO Spotlight** findings will be distributed in a periodic series of emails as well as blog postings.

## Setting an 'Earthy' Standard

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Since 2003, 26 European specialists in humus forms have been working to develop a standardized system of classifying the condition and configuration of topsoil layers adapted to European ecological conditions.

The result of their work could become an international reference, of which, none exists today.

Studies have shown that soils store more carbon than terrestrial vegetation and the atmosphere combined, and also that soil organic matter plays a key role in the global carbon cycle as it stores huge amounts of carbon and thus counters global warming.

It is also known that some soil organic matter remains stable for thousands of years while other soil organic matter degrades quickly and releases carbon into the atmosphere thereby reinforcing the greenhouse effect.

So, as the earth's climate warms and concerns increase about the amount of carbon in the atmosphere, a standardized system will allow a better understanding of the role of the humus forms in the carbon cycle – and the conditions under which they represent a sink (absorbing carbon), or a source (releasing carbon into the atmosphere).

Humus forms – the brown or black layers consisting of partially or wholly decayed matter – provide nutrients for plants and increase the ability of soil to retain water. These layers contain a large part of the total soil organic carbon and provide an interface between the atmosphere and the mineral soil, representing an important linkage to aquatic systems.

The main challenge the specialists have sought to address is the lack of harmony that exists in classification keys for humus forms – they are different in every European country.

Those classification differences mean that data cannot be easily exchanged among research teams, land managers and policy makers working with soils in different countries.

The specialists' aim is to improve the compatibility of those established national classification systems and to develop a unified European reference base for humus forms. The classification system is geared primarily to West European countries between 40-60 degrees of latitude, but it's expected to work in other ecosystems of equivalent climate. It has already been successfully tested in some forests in Iran.

While aimed primarily at forest soils, the classification system is also applicable to grasslands, pastures and wetlands.

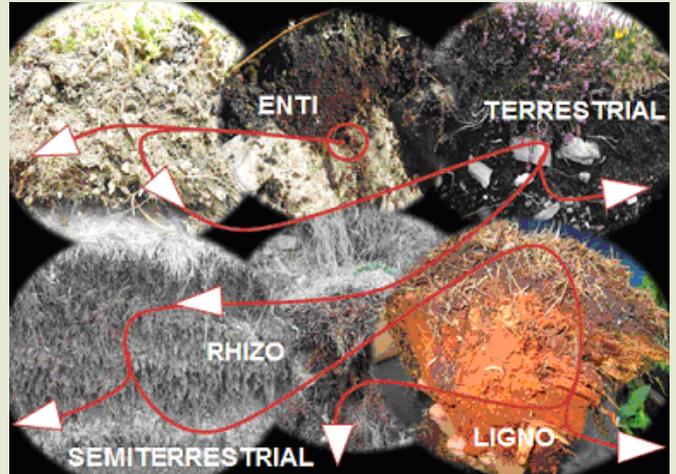
One of the keys to this standardization is to recognize differences in local ecosystems and the need to analyze the soil horizons – layers parallel to the soil surface, whose physical characteristics differ from the layers above and beneath – of each different humus form.

The European specialists have set up protocols for the assessment and sampling of certain horizons and have developed definitions for specific diagnostic horizons, materials and their designation.

Acceptance of this classification system will provide a valuable tool to help us better understand the connection between different humus forms and carbon storage in the soil and the response of soil organic matter to a warming climate.

To view the full report, go to:

<http://www.sciencedirect.com/science/article/pii/S001670611100139X> (summarized as published article) and  
[http://hal.archives-ouvertes.fr/docs/00/56/17/95/PDF/Humus\\_Forms\\_ERB\\_31\\_01\\_2011.pdf](http://hal.archives-ouvertes.fr/docs/00/56/17/95/PDF/Humus_Forms_ERB_31_01_2011.pdf)  
(unpublished complete document)



*New Humus forms, in a structured dynamic system of classification. (Photo provided by Augusto Zanella, Deputy Coordinator of IUFRO 8.02.03)*

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